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(54) Reversible seat belt buckle

(57) A buckle (150) suitable for a harness of a reversible seat pushchair including:-a body (152); a lug (166) for permanent attachment to a waistbelt strap (76); a lug (164) for permanent attachment to a shoulder strap (74), and means (170, 180, 153) for releasably lockingly engaging the lugs (164, 166) to the body (152), wherein the waistbelt strap lug (164) is discrete from the shoulder strap lug (166) and the releasable parts may be interchangeably engaged with the body 152 in a different orientation when the seat is reversed.

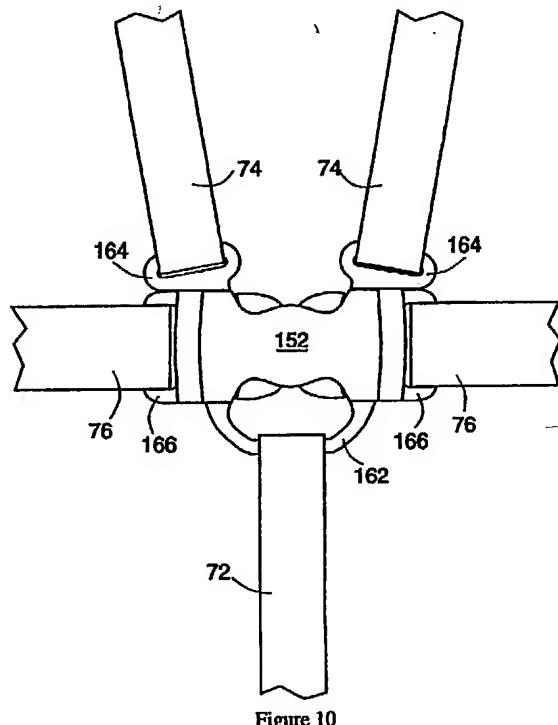
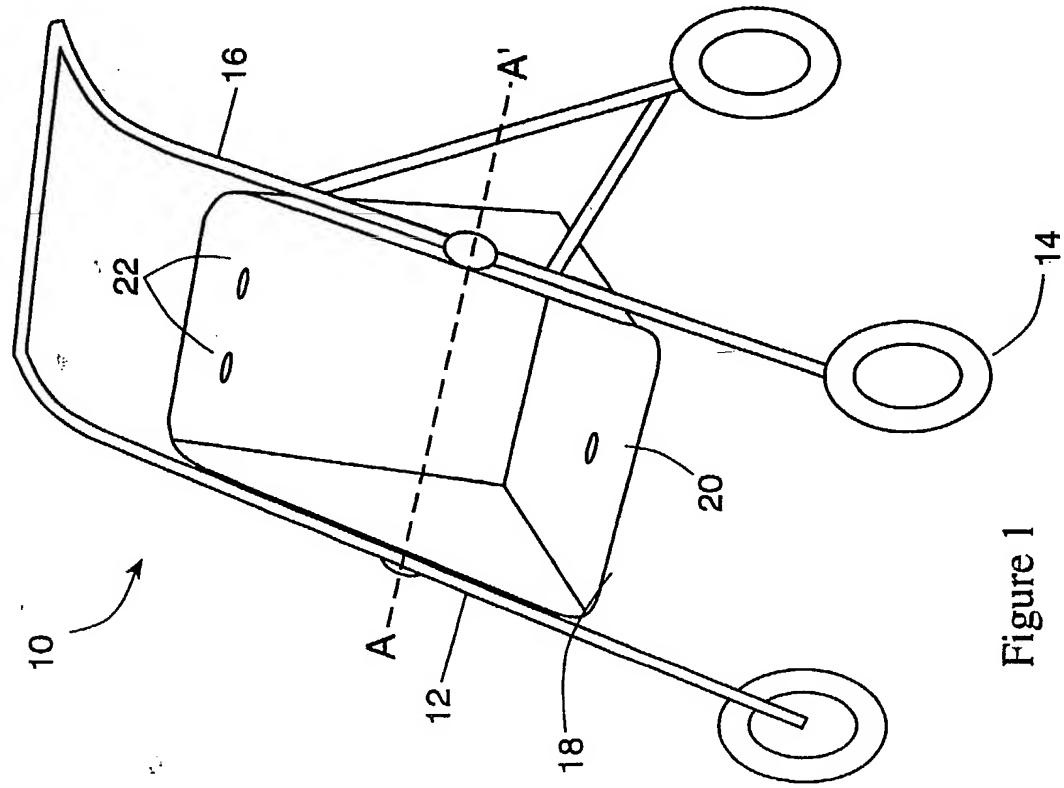
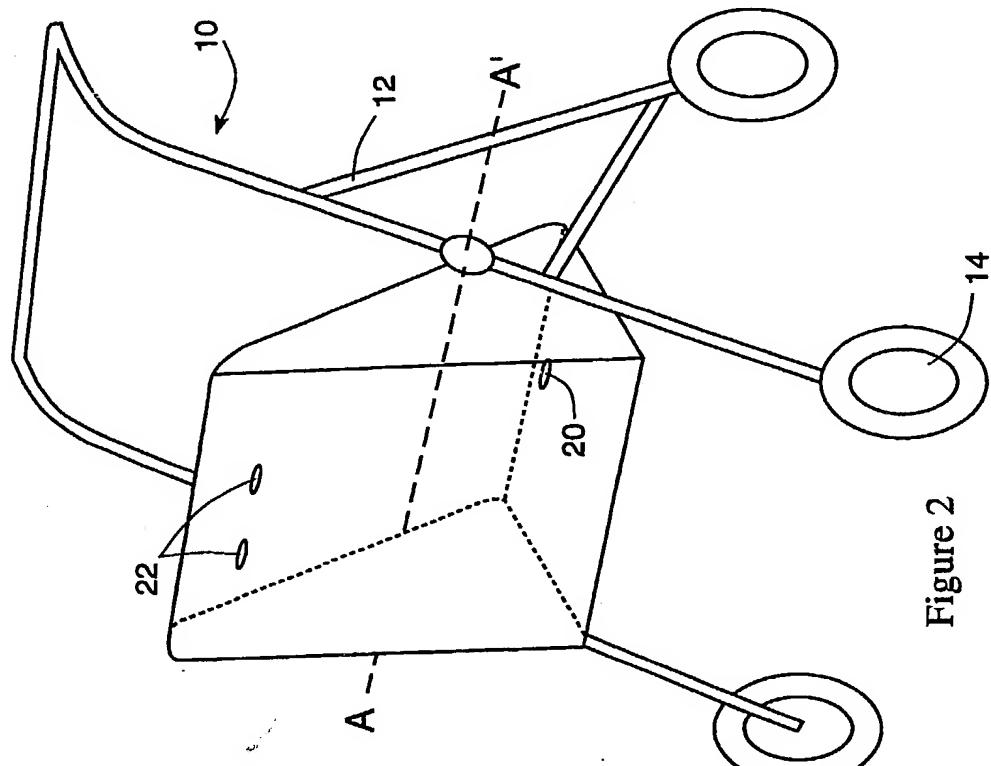


Figure 10

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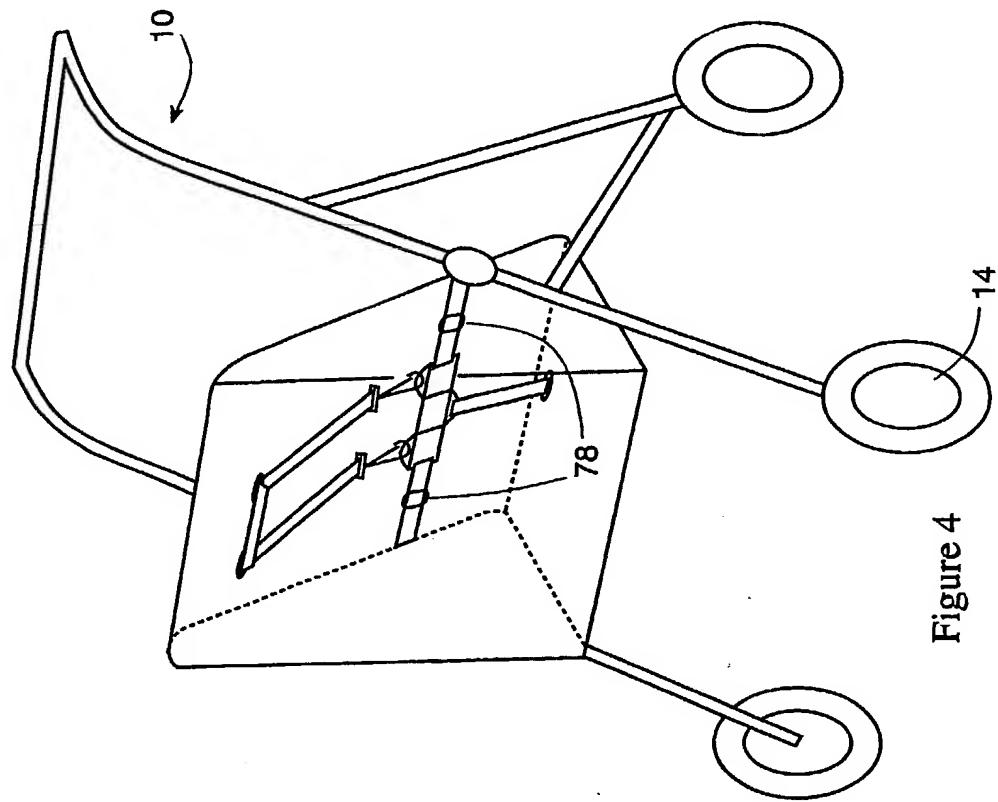


Figure 4

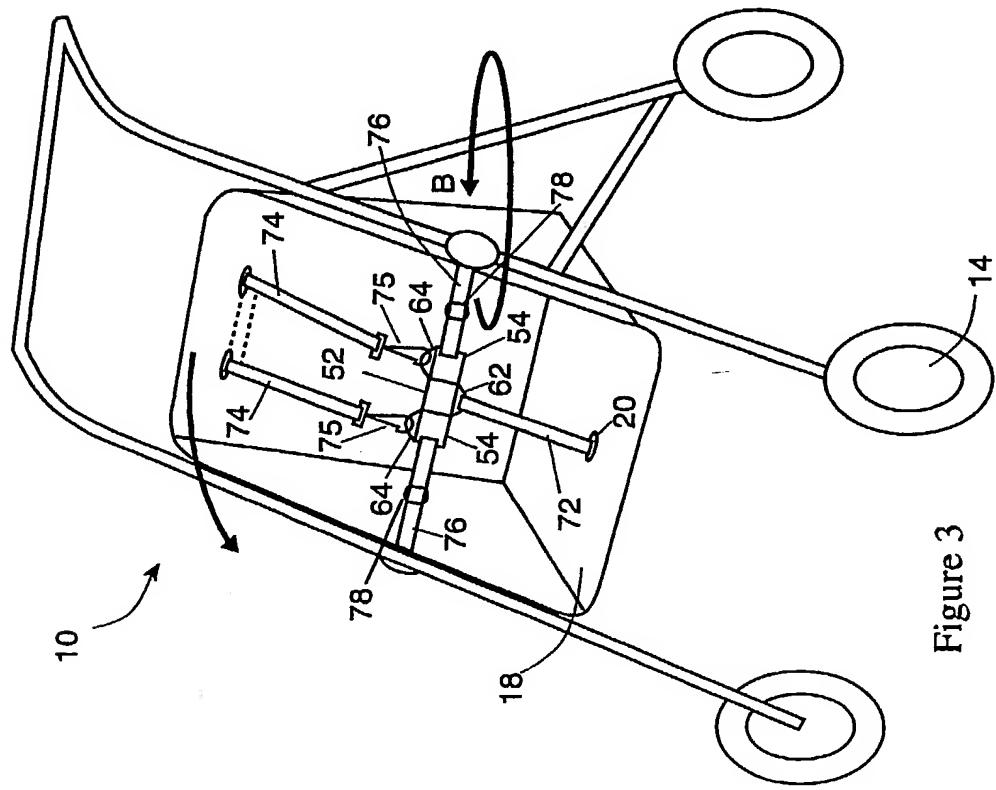


Figure 3

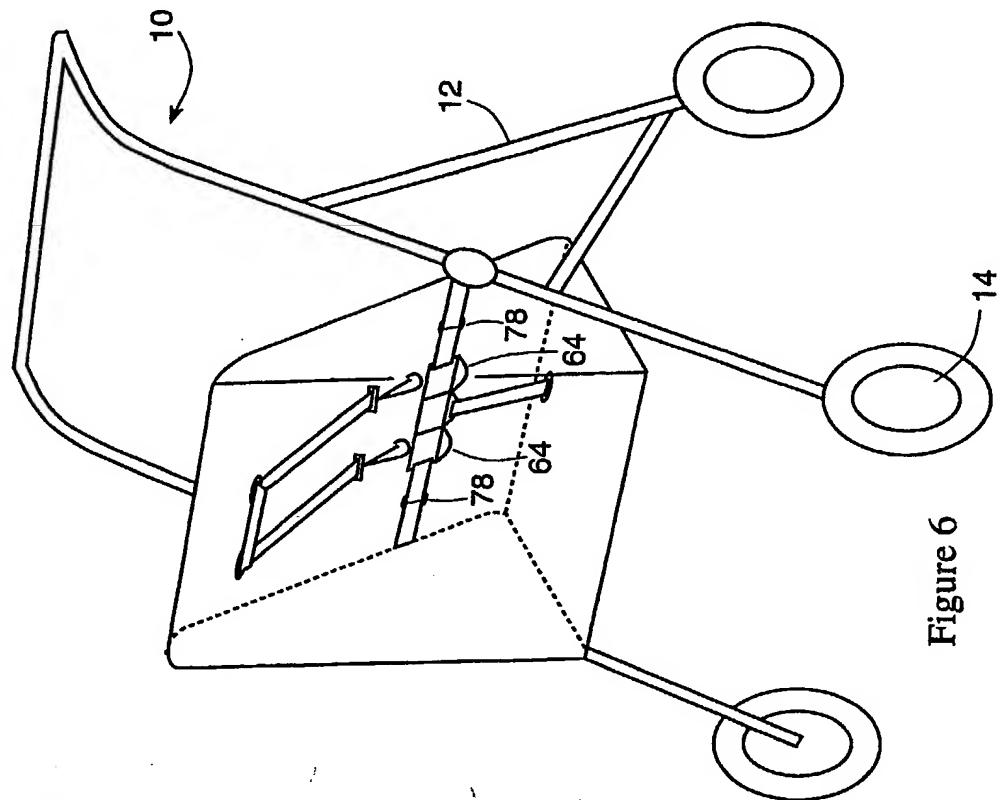


Figure 6

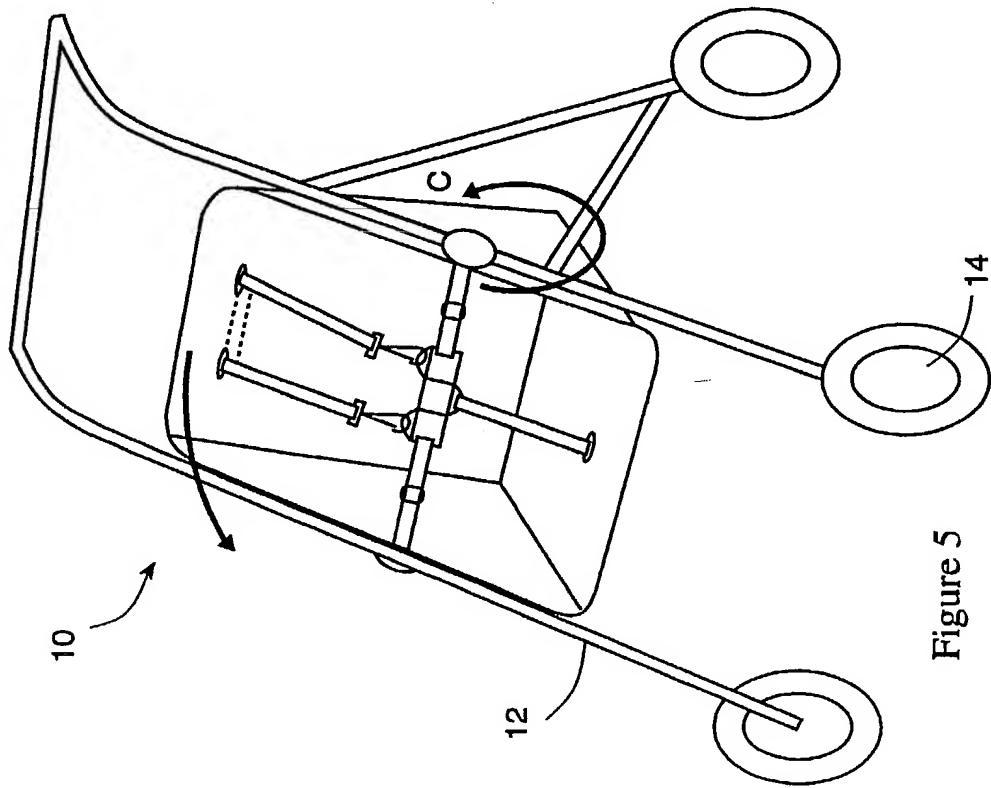


Figure 5

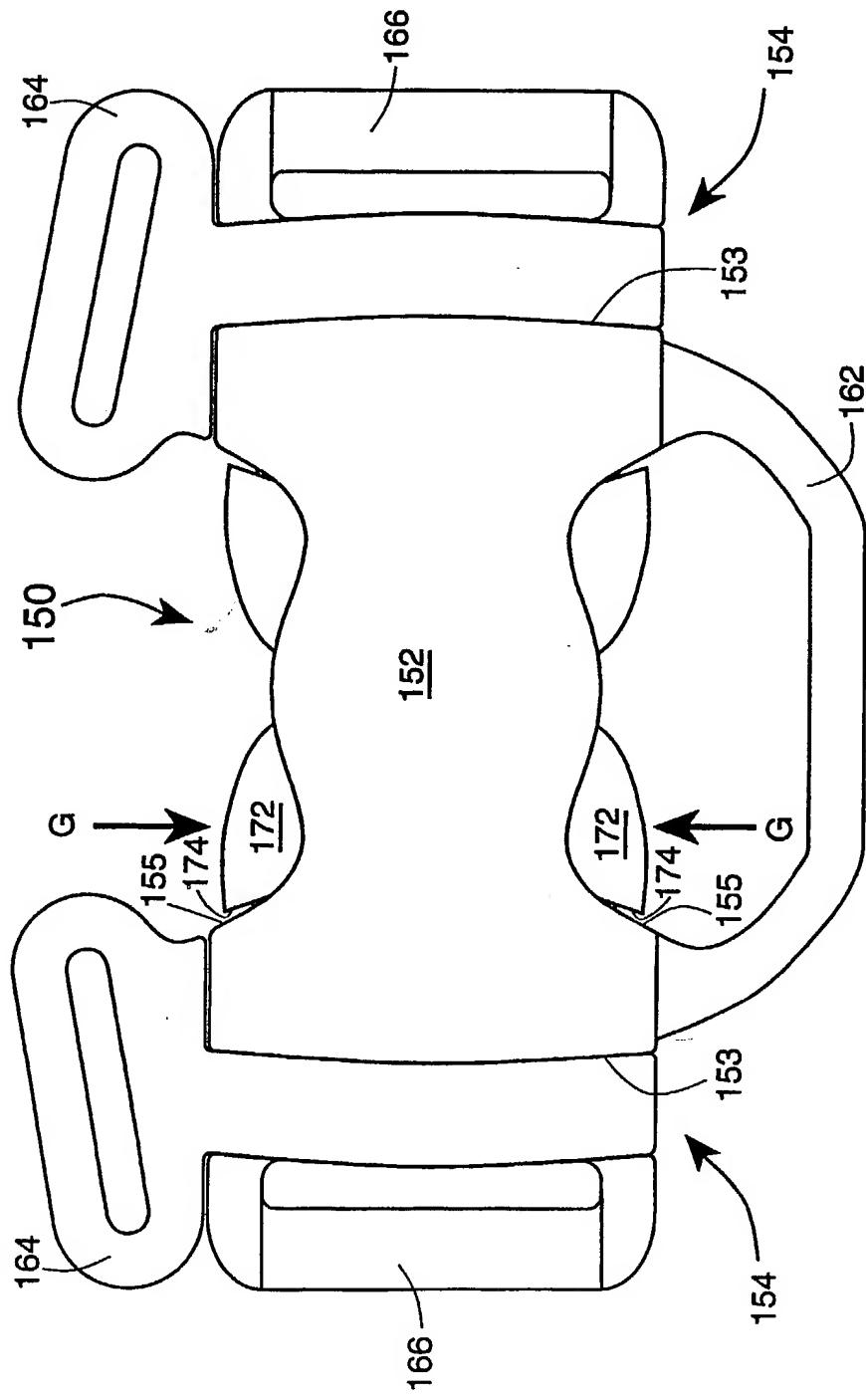


Figure 7

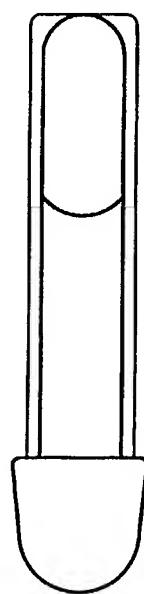


Figure 8(f)

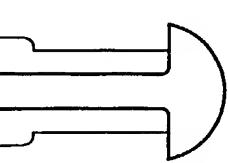
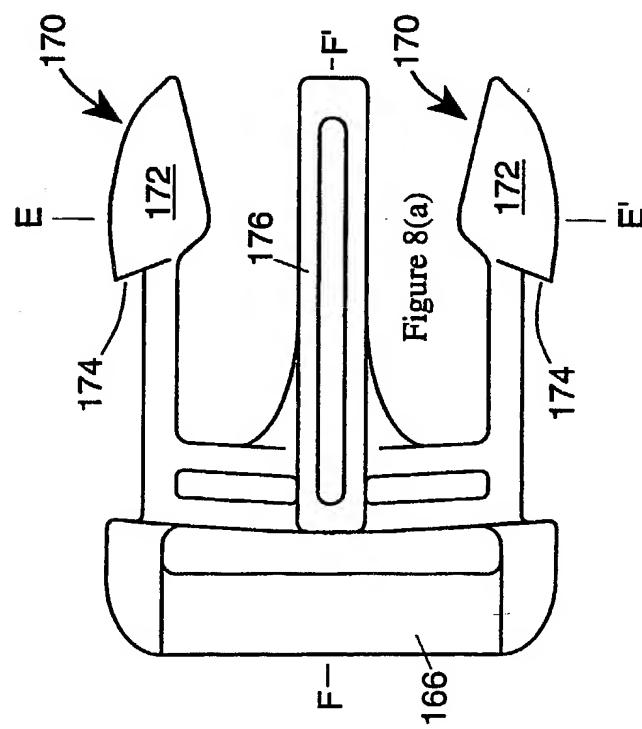


Figure 8(d)

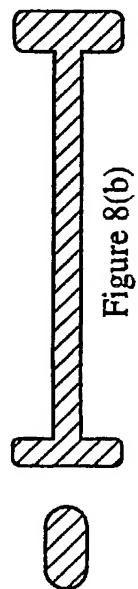


Figure 8(b)

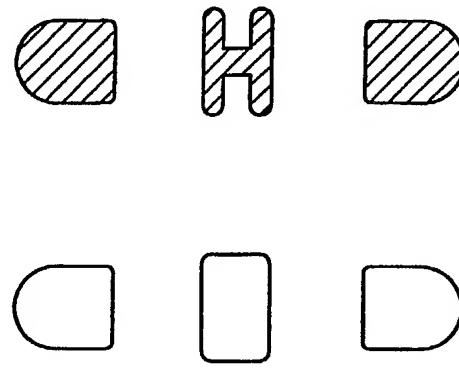


Figure 8(c)

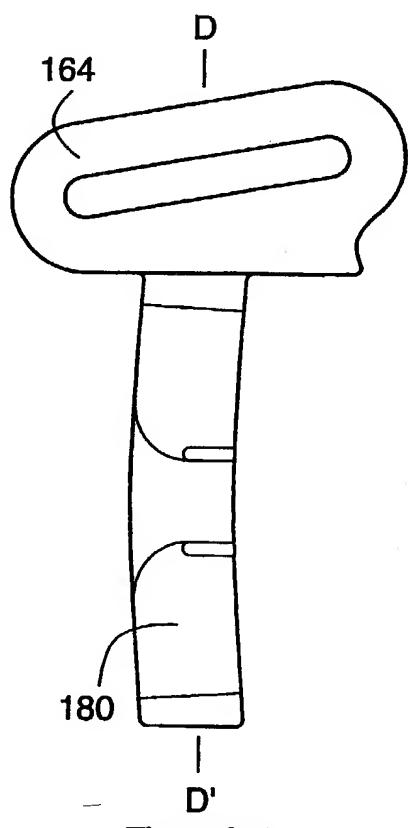
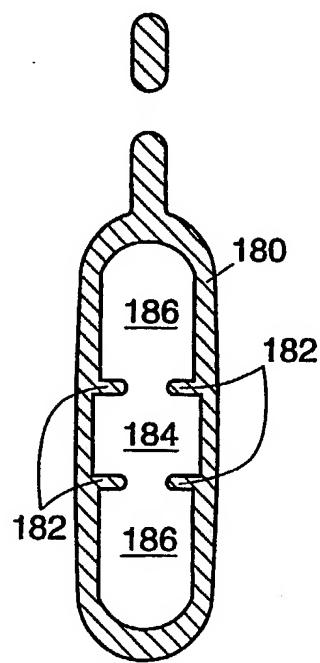
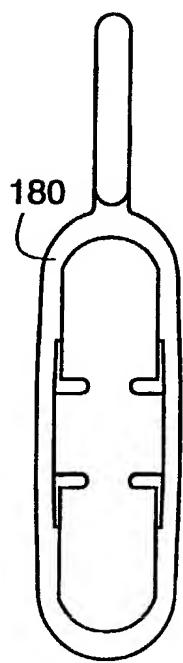


Figure 9(c)

Figure 9(b)

Figure 9(a)

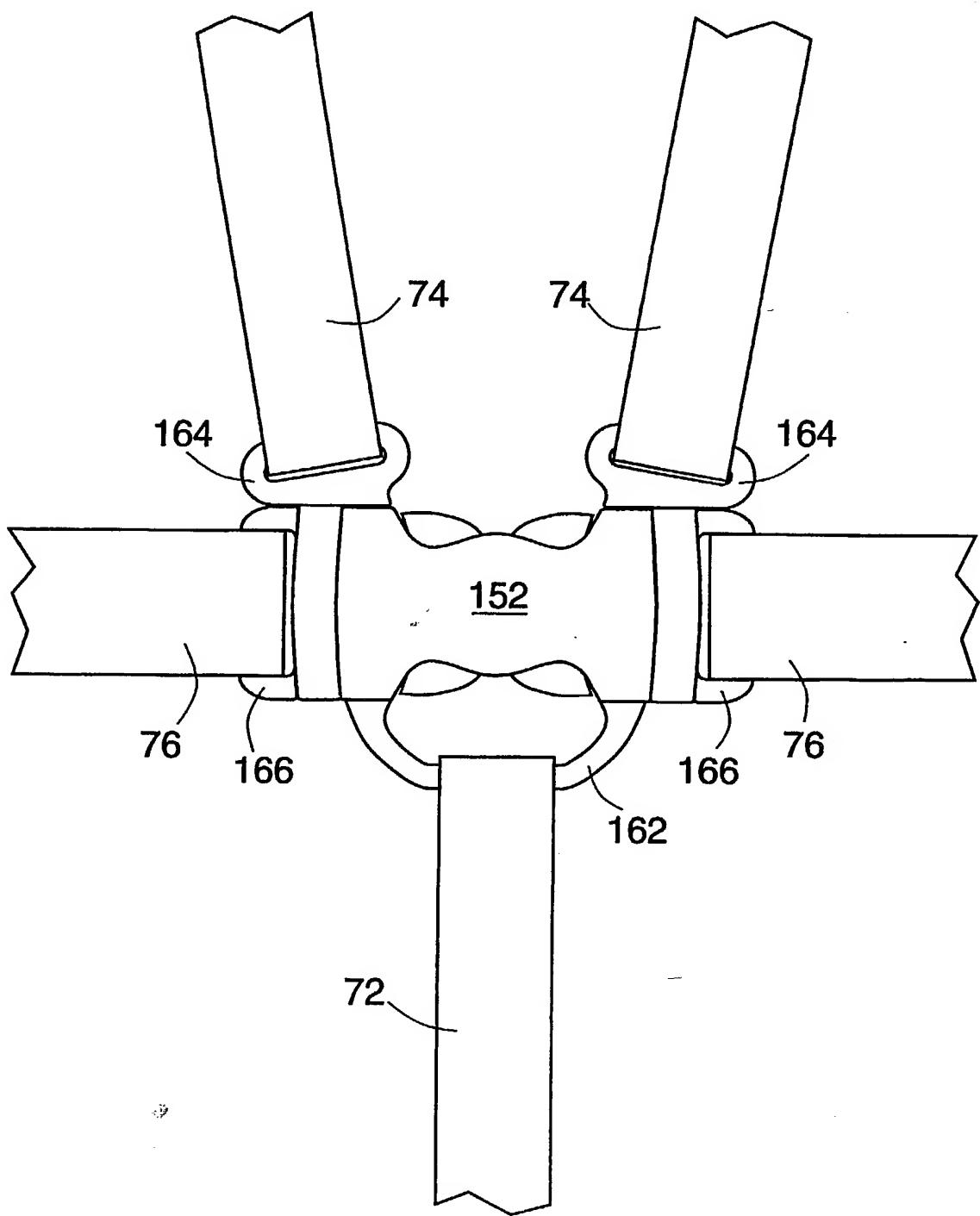


Figure 10

A BUCKLE

The present invention relates to a buckle suitable for a harness especially, but not exclusively, a harness for a reversible seat pushchair.

5

Reversible seat pushchairs enable the adult to decide in which direction the child faces during travel. A known reversible seat pushchair is shown in Figures 1 and 2. Although the reversible seat pushchair does not form part of the invention, as such, a brief outline description of it 10 follows in order to put the invention into context.

The reversible seat pushchair is generally designated 10 and comprises a support frame 12 on which four wheels 14 are mounted for rotation. A seat frame 16, which is essentially planar, is mounted to the 15 support frame 12 such that it is either held in a first fixed position as in Figure 1, or pivoted about the axis A-A¹ and held in a second fixed position as in Figure 2. A seat cover 18 encloses the seat frame 16. For reasons of diagrammatic simplicity, in the drawings it looks as if the seat frame 16 is not planar, but also seems to provide the seat cover 18 with 20 a well-defined seat and back region; as will become apparent hereinafter, this is not the case and the seat cover 18 should be regarded as merely sagging from the planar seat frame 16. The seat cover 18 also includes a lower aperture 20 and upper apertures 22 for receiving straps of the pushchair harness.

25

Figure 3 and 4 show the pushchair 10 of Figures 1 and 2 provided with a known harness and five-way buckle arrangement.

The buckle 50, which is a three-part construction, comprises a body 30 52, having a crutch strap lug 62, and two wing portions 54 which

lockingly engage the body 52 and are each provided with shoulder strap lugs 64 and waistbelt strap lugs 66.

The harness 70 comprises a crutch strap 72 which is permanently attached at one end to the crutch strap lug 62, and permanently attached at the other end to a part of the seat frame enclosed within the seat cover 18, but not visible in the drawings. The harness 10 also comprises shoulder straps 74 which form part of a single strap member and are each provided on the end thereof with a hook 75 which engages the shoulder strap lugs 64. The harness 70 also comprises waistbelt straps 76 which are permanently attached at one end to the waistbelt strap lug 66, and permanently attached at the other end to the support frame 12.

The attachment of the waistbelts straps 76 to the support frame 12 permits rotation of the waistbelt straps 76 about a vertical axis indicated by the arrow B. The waistbelt straps 76 are provided with adjusting buckles 78 for adjusting the length of the waistbelts 76.

In order to reverse the direction of the seat, say from its forward facing (Figure 1) position to its rearward facing (Figure 2) position, it is necessary to:

- (i) rotate the seat frame 16 from its first Figure 1 position to its second Figure 2 position, as previously described;
- (ii) detach the two wing portions 54 from the body portion 52;
- (iii) feed the body portion 52 through the lower aperture 20 such that the crutch strap 72 projects from the other side of the seat cover 18;
- (iv) detach the hooks 75 of the shoulder straps 74 from the shoulder strap lugs 64, unthread the shoulder straps 74 completely from the seat cover 18, and rethread the shoulder straps 74 in an

opposite manner such that the hooks 75 are on the opposite side of the seat cover 18;

- (v) rotate each waistbelt strap 76 about a vertical axis as indicated by arrow B; and
- 5 (vi) reconnect the buckle 50.

The pushchair 10 is then in the position illustrated in Figure 4.

A disadvantage of this pushchair 10 is that in this reverse, Figure 4 position the adjusting buckles 78 are now also reversed and so point 10 towards the child (or where it would be) which makes them difficult to manipulate and unsightly.

To avoid this disadvantage, it is also known to attach the waistbelt straps 76 to the support frame 12 so as to permit the rotation of the 15 waistbelt straps 76 about a horizontal axis as indicated by the arrow C in Figure 5.

However, as illustrated by Figure 6, if reversal of the seat is carried out essentially as described in relation to Figures 3 and 4, except 20 of course step (v), the adjusting buckles 78 are in the desired orientation after reversal, but the shoulder strap lugs 64 are no longer at the top of the buckle 50 as illustrated in Figure 6. It is known to overcome this problem by producing a buckle with both top and bottom shoulder strap lugs, but this measure itself introduces problems, namely the spare lugs 25 (i) are possible finger traps and (ii) interfere with and chafe the child's legs.

The above described prior art is also regarded as being disadvantageous in its use of the hooks 76 which are generally regarded as being unsightly 30 and undesirable.

With this in mind, according to a first aspect, the present invention provides a buckle suitable for a harness of a chair, especially a pushchair, including:-

- 5 a body;
- a lug strap for permanent attachment to a waistbelt strap;
- a lug for permanent attachment to a shoulder strap, and
- means for releasably lockingly engaging the lugs to the body, wherein the waistbelt strap lug is discrete from the shoulder strap lug.

10

In the context of the present invention, the term "permanent attachment" means an attachment which is not intended to be regularly broken and which cannot be readily broken.

15

By the provision of these features, the present invention provides a functioning buckle which need not include hooks.

Preferably, the engagement means permits the shoulder strap lug to be engaged in two orientations.

20

By the provision of this feature, the buckle of the present invention when connected to the pushchair of Figures 5 and 6 avoids the necessity of providing both top and bottom shoulder strap lugs, and thereby avoids the problems associated with that approach.

25

Other features of the present invention are given in the dependant claims and the following description.

Exemplary embodiments of the invention are hereinafter described
30 with reference to the accompanying drawings, in which:

Figures 1 and 2 show a known reversible seat pushchair;

Figures 3 and 4 show the pushchair of Figures 1 and 2 provided with a harness and buckle arrangement;

5

Figures 5 and 6 show the pushchair of Figures 1 and 2 provided with a slightly modified harness and buckle arrangement;

Figure 7 shows a front view of an assembled buckle in accordance
10 with the present invention;

Figure 8(a) shows a front view of a part of the wing portion including the waistbelt strap lug;

15 Figures 8(b-f) show, respectively, a section through F-F¹, a section through E-E¹, a left hand side view, a right hand side view, and a top or bottom view from the Figure 8(a) perspective;

Figure 9(a) shows a front view of a part of the wing portion
20 including the shoulder strap lug;

Figure 9(b) and 9(c) show, respectively, a section through D-D and a left hand side view from the Figure 9(a) perspective; and

25 Figure 10 shows the buckle of Figure 7 with the harness attached.

Referring to Figures 7 to 10, the preferred buckle of the present invention, designated 150, is a five-way, five-part plastics construction. It comprises a body 152 having a crutch strap lug 162 and a pair of wing portions 154,
30 which releasably lockingly engage the body 152 via a pair of side

apertures 153. Each wing portion 154 comprises a shoulder strap lug 164; a waistbelt strap lug 166; and a means for releasably lockingly engaging the lugs to the body. As both wing portions 154 are identical, only the left hand wing portion from the Figure 7 perspective, and its engagement
5 with the body 152, will be described hereinafter for the sake of brevity.

The waistbelt strap lug 166 is shown in Figure 8(a). A male portion of the engagement means is provided on the waistbelt strap lug 166 and comprises a pair of arms 170, projecting from the waistbelt strap lug 166, which are resiliently deformable towards one another. The ends of the arms 170 are provided with widened portions 172 which define a latching surface 174. A guide stem 176 centrally disposed between the arms 170 also projects from the waistbelt strap lug 166. Various other views of the waistbelt strap lugs 166 and the associated male portion of
10 15 the engagement means are shown in Figures 8(b-f).

The shoulder strap lug 164 is shown in Figure 9(a). A collar 180, which forms part of the engagement means, projects from the shoulder strap lug 164. Referring to Figures 9(b-c), the collar 180 is provided with
20 two pairs of opposed ribs 182, which divide the volume defined by the collar 180 into three regions, a central region 184 and two outer regions 186.

The collar 180, the arms 170 and the guide stem 176 are dimensioned and
25 arranged such that the collar 180 can slide onto the arms 170, whereby the arms 170 occupy the outer regions 186 and the guide stem 176 occupies the central region 184. As both the arms 170 and guide stem 176, and the collar 180 are symmetrical, either arm 170 can be inserted into either outer region 186.

The shoulder strap and the waistbelt strap lugs 166, 164 can be engaged with the body 152 by first mounting the collar 180 onto the arms 170 as just described, and then inserting the arms 170 into a side aperture 153 of the body 152. On initially inserting the arms 170 into the side 5 aperture, the arms 170 are urged towards one another. Once the arms 170 extend into the body 152 to the extent illustrated in Figure 7, the arms 170 are permitted by the geometry of the body 152 to spring outwardly and resume their natural position. In this position, the latching surface 174 on the arm 170 together with a co-operating latching surface 155 on the body 10 152 lock the arms 170 in a position in which they cannot be withdrawn from the body 152 without the arms 170 being simultaneously depressed as indicated by the arrows G.

Figure 10 shows the buckle 150 with all its lugs permanently 15 attached to the harness straps.

In normal use on the pushchair 10 of Figures 5 and 6, it will be appreciated that as the shoulder strap lug 164 is discrete from the waistbelt strap lug 166, it is possible to secure a child in the pushchair 10 without 20 the use of hooks. Further, if it is desired to reverse the direction of the seat, the general procedure adopted in the above-described prior art can be followed, but it should be noted that as the shoulder strap lug 164 is discrete from the waistbelt strap lug 166, it is not rotated together with the waistbelt strap lug 164, and, therefore, can be correctly positioned after 25 seat reversal.

CLAIMS

1. A buckle suitable for a harness including:-
a body;
5 a lug for permanent attachment to a waistbelt strap;
a lug for permanent attachment to a shoulder strap, and
means for releasably lockingly engaging the lugs to the body,
wherein the waistbelt strap lug is discrete from the shoulder strap lug.
- 10 2. A buckle as in Claim 1, wherein the engagement means permits the
shoulder strap lug to be engaged in two orientations.
- 15 3. A buckle as in Claims 1 or 2, wherein the engagement means
includes a male portion on either the body or the waistbelt strap lug; a
female portion, adapted to lockingly receive the male portion, formed in
the other of the body or the waistbelt strap lug; and a collar formed in the
shoulder strap lug through which the male portion passes.
- 20 4. A buckle constructed arranged, and adapted to operate substantially
as hereindescribed with reference to Figures 7 to 10 of the accompanying
drawings.

9

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

Application number
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Relevant Technical Fields

(i) UK Cl (Ed.M) E2A (AARB, AAMA, AAMX, AAN, AAS, ACAM, APF, AAG)

(ii) Int Cl (Ed.5) A44B 11/25, -11/28

Search Examiner
A ANGELE

Date of completion of Search
22 DECEMBER 1994

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Documents considered relevant following a search in respect of Claims :-
ALL

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X, Y	GB 1183022	(AMERICAN SAFETY)	1, 3
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